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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,725	08/25/2003	Hirotaka Iwano	054825-5003	1193

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EXAMINER	
TANG, SON M	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,725	IWANO, HIROTAKA	
	Examiner	Art Unit	
	Son M. Tang	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18* is/are allowed.

6)☒ Claim(s) *1-17 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/25/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 3-4, 6-11, 13, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon [US 6,850,629].

Regarding claims 1and 3-4: Jeon discloses an apparatus and method for detecting a position of a lane marker comprising:

-overlooked view converting image of a road surface taken by photographing unit on moving vehicle (see step S150 of Fig. 2), the brightness profile created by obtaining an brightness coordinate (objects) in a direction perpendicular to the road width direction and indicating a high brightness from the brightness profile [see Fig. 3 and 9], road surface position detecting means for obtaining a position of the road surface corresponding to the indication of a high brightness lane marker obtained by processor 20 [col. 3, lines 45-62 and Fig. 11, col. 10-24], whereby, the processor removes lower brightness images and kept the highest brightness images to carry out the detection of the position of the lane marker, Jeon does not specifically mention that the brightness object is an integral brightness, however, Jeon discloses that a plurality of processes are performed to obtain a function that vertically sums brightness values in the lane markers [see col. 4, lines 45-49 and 58-61]. It is obvious one having skill in the art to

recognize that the summation function in Jeon can be implemented or derived using integral brightness in every coordinate in the road image.

Regarding claim 6: Jeon further discloses that the overlooked image is compressed by image compressing means [see Fig. 2 at step S160].

Regarding claim 7: Jeon further discloses that the processor 20 performs an average brightness determination to remove elements from the images that may act as noise [Fig. 3a-3b, col. 3, lines 44-49], in this context, the overlooked image being amended from Fig. 3a to Fig. 3b. Therefore, it is obvious of one having ordinary skill in the art that the amended overlooked means is included in the processor 20.

Regarding claim 8: Jeon disclose all the limitations as described above, except for not specifically mention that the brightness profile is turned to the direction perpendicular to the road width direction of a road surface for scanning. As long as, the overlooked image across the road surface is being scanned, to apply any known method for the same function is not constitute an inventive step but is an obvious of matter of choice. Therefore, it is obvious of one having ordinary skill in the art to turn the image to the direction perpendicular to the road width direction to scan the scanning line as user desired.

Regarding claim 9: Jeon disclose all the limitations as described above, further discloses that the brightness profile creating means has an analog integration circuit [see col. 3, lines 32-40].

Regarding claim 10: As described in the claim above, Jeon further discloses that the image converted to digital data [see col. 3, lines 39-40], in this context, it is obviously that a full adder is being used to convert image signal to digital signal data.

Regarding claims 11 and 13: Jeon further discloses that the brightness profile is being filtered [see Fig. 2 step S140 and Abstract], except for not specifically mention a high pass filter (HPF) or low pass filter (LPF) for filtering image. As long as, the brightness image is being filtered using any known filter for the same function is not constitutes inventive step, but obvious of design choice. It is obvious of one having ordinary skill in the art to use any particular known filter as (HPF)/(LPF) in the system for filtering brightness image as user desired.

Regarding claims 17 and 19: Jeon discloses an apparatus and method for detecting a position of a lane marker comprising:

-overlooked view converting image of a road surface taken by photographing unit on moving vehicle (see step S150 of Fig. 2), the brightness profile created by obtaining an brightness coordinate (objects) in a direction perpendicular to the road width direction and indicating a high brightness from the brightness profile [see Fig. 3 and 9], road surface position detecting means for obtaining a position of the road surface corresponding to the indication of a high brightness lane marker obtained by processor 20 [col. 3, lines 45-62 and Fig. 11, col. 10-24], Jeon does not specifically mention that the brightness object is an integral brightness, however, Jeon discloses that a plurality of processes are performed to obtain a function that vertically sums brightness values in the lane markers [see col. 4, lines 45-49 and 58-61]. It is obvious one having skill in the art to recognize that the summation function in Jeon can be implemented or derived using integral brightness in every coordinate in the road image.

Jeon further teaches that the system also determines a lateral lane deviation of the vehicle (see Fig. 11, col. 10-24) that constitutes of traversing speed to the marker, wherein deviation is including the velocity, distance and time of change, and the vehicle is deviating from the lane,

either the driver is warned (alarm) or a steering actuator is operated to make corrections to the position of the vehicle (see col. 1, lines 24-30), Jeon does not specifically mention that the alarm warned driver when the deviation (traversing speed) is over a predetermined speed, as described above that the deviation is derived from the change of speed, distance and time to the lane marker. Therefore, it would have been obvious of one having ordinary skill in the art that the deviation alarm occur only when the rate of change in speed to the lane marker is at certain speed (predetermined speed), for the purpose of fault alarm.

3. Claims 14-15, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Sakurai [US 6, 549,642].

Regarding claims 14-15: Jeon discloses a plurality of neighboring coordinating indicating a lower brightness [see Fig. 3a], except for not specifically disclose a lane model memory for comparing a relation between the lane model and the low brightness coordinates. Sakurai teaches a method and system for detecting road area, which comprises a predetermined model, which obviously included lane width and space of an adjoining lane marker [see Fig. 3, col. 4, lines 55-67]. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention to use a lane models as suggested by Sakurai in Jeon, so that, the lane width can be determined faster and more accurate.

Regarding claims 20-21: Jeon further shows a steering controller means 30 for controlling the steering angle [see Fig. 11, col. 5, lines 214-24], except for not specific about the vehicle velocity detector, since, the deviation distance can be determined, the velocity is derived from the deviation determination. Therefore, it is obvious of one having ordinary skill in the art

would recognize that deviation is a rate of change, in which including speed (velocity), distance and time of the vehicle.

4. Claims 2, 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Satoh et al. [US 6,879,706; Satoh].

Regarding claims 2, 5 and 12 : Jeon discloses an apparatus and method for detecting a position of a lane marker comprising:

-overlooked view converting image of a road surface taken by photographing unit on moving vehicle (see step S150 of Fig. 2), the brightness profile created by obtaining a group of brightness coordinates (objects) in a direction perpendicular to the road width direction and indicating a high brightness from the brightness profile [see Fig. 3a and 9], wherein the group of coordinate (objects) proximity to the coordinate and which indicate a higher brightness than the other coordinate from the brightness profile (see col. 3, lines 44-56), a road surface position detecting means for obtaining a position of the road surface corresponding to the indication of a high brightness lane marker obtained by processor 20 [col. 3, lines 45-62 and Fig. 11, col. 10-24], Jeon does not specifically mention that the brightness object is an integral brightness, however, Jeon discloses that a plurality of processes are performed to obtain a function that vertically sums brightness values in the lane markers [see col. 4, lines 45-49 and 58-61]. Therefore, it is obvious one having skill in the art to recognize that the summation function in Jeon can be implemented or derived using integral brightness in every coordinate in the road image.

Jeon does not specifically disclose that uses a specified width value to determine the lane marker. Satol teaches lane marker detection comprises, a position of inflection point in said brightness profile to determine a specified width value that uses to determine the lane marker [see Fig. 3 and 6, col. 8, lines 45-67]. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention to use a specified width value for lane marker as suggested by Satol in the lane marker determination of Jeon, for the benefit of prevent fault alarm.

5. Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Lemelson et al. [US 6,553,130; Lemelson].

Regarding claim 16: Jeon discloses an apparatus and method for detecting a position of a lane marker comprising:

-overlooked view converting image of a road surface taken by photographing unit on moving vehicle (see step S150 of Fig. 2), the brightness profile created by obtaining an brightness coordinate (objects) in a direction perpendicular to the road width direction and indicating a high brightness from the brightness profile [see Fig. 3 and 9], road surface position detecting means for obtaining a position of the road surface corresponding to the indication of a high brightness lane marker obtained by processor 20 [col. 3, lines 45-62 and Fig. 11, col. 10-24], Jeon does not specifically mention that the brightness object is an integral brightness, however, Jeon discloses that a plurality of processes are performed to obtain a function that vertically sums brightness values in the lane markers [see col. 4, lines 45-49 and 58-61]. It is

obvious one having skill in the art to recognize that the summation function in Jeon can be implemented or derived using integral brightness in every coordinate in the road image.

Jeon further teaches that the system also determines a lateral lane deviation of the vehicle (see Fig. 11, col. 10-24) that constitutes of traversing speed to the marker, wherein deviation is including the velocity, distance and time of change, and the vehicle is deviating from the lane, either the driver is warned (alarm) or a steering actuator is operated to make corrections to the position of the vehicle (see col. 1, lines 24-30), Jeon does not specifically mention that the alarm warned driver when the deviation (traversing speed) is over a predetermined speed, as described above that the deviation is derived from the change of speed, distance and time to the lane marker. Therefore, it would have been obvious of one having ordinary skill in the art that the deviation alarm occur only when the rate of change in speed to the lane marker is at certain speed (predetermined speed), for the purpose of fault alarm.

Jeon does not specifically disclose that an alarm is raising a different alarm sound to a driver corresponding to the deviation (distance) obtaining means, as described above that the driver alternative being warned when the deviation is occurred, Lemelson teaches a vehicle warning system comprises, a danger level warning presented by the detected hazard (including lane marker see col. 15, lines 38-44), wherein the warning level includes different intensity/variable audible alarms [see col. 9, lines 54-60]. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention to have different sound of warning as suggested by Lemelson in the warning feature of Jeon, for the benefit of easy to recognize the danger level of the alarm sound.

Allowable Subject Matter

6. Claim 18 is allowed.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yasui et al. [US 6,091,833], Arai [US 6,813,370], Hiwatashi [US 6,009,377], Iisaka et al. [US 6,546,118], Ikeda et al. [US 5,699,057], Yuhara et al. [US 6,658,137] and Shimoura et al. [US 5,638,116.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son M. Tang whose telephone number is (571)272-2962. The examiner can normally be reached on 4/9 First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on (571)272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BENJAMIN C. LEE
PRIMARY EXAMINER